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THE INFLUENCE OF NEW TIMES OF SERVICE
ON MILK CONSUMPTION IN SELECTED NEW MEXICO SCHOOLS

This report summarizes the findings and conclusions of one in a series of studies of the Special School Milk Program undertaken by State educational agencies in cooperation with the United States Department of Agriculture, Agricultural Marketing Service. Funds to conduct these studies were made available by the Commodity Credit Corporation to permit the appraisal and development of new and more effective methods of increasing the availability and consumption of milk in schools.

This study was undertaken by the New Mexico Department of Education in the fiscal year 1955. Supervising the study was Mrs. Carmen R. Dyche, Director, School Lunch Division, New Mexico Department of Education. Mrs. Maurine Blackwell, Research Assistant, State College, New Mexico, was in immediate charge of the experimental program.

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Purpose of Study

To determine the effect of the introduction of new times of milk service (other than the lunch hour) on consumption by school children and to analyze the delivery or handling problems encountered in the establishment of new times of serving milk. Information was also developed on cost of milk to the school and the price charged the students.

Procedure for Conduct of Study

A letter was sent to each of the 145 schools listed by the School Lunch Division of the State Department of Education as serving milk only at the noon hour prior to their participation in the Special School Milk Program. Accompanying the cover letter were two questionnaires. The first questionnaire was to be filed at the beginning of the study and requested information on the price of milk to the students, the cost of milk to the schools, delivery service, refrigeration facilities and methods of letting contracts for school milk. Suggestions for improving the program were also requested.

The second questionnaire consisted of a set of five weekly report forms to be completed by the sample schools. The forms requested information on the number of half pints of milk served during the week, the number of individuals served and the times of service. These weekly reports covered the period beginning March 14 and ending April 15, 1955.

Personnel of the School Lunch Division visited many of the schools. One hundred and thirty-two schools of the original 145 completed the general report. These included elementary and secondary schools in both rural and urban areas.

Of the 132 schools submitting the general report, 67 served milk at lunch and at other times.

A measure of increased consumption in the survey period was made by comparison with the average daily consumption of milk by children at school during the months of December 1953 and April 1954, referred to in this summary as the "base."

Conclusions

Extra times of service in 60 schools submitting comparable data resulted in a 51 percent increase in consumption by those students who drank milk during the experimental period. This finding was based on the assumption that consumption averaged 1.00 half pint daily per individual drinking milk in 1954 since, at that time, only one half pint at noon was offered.

In 29 schools offering milk only at noon during the experimental period, consumption per child drinking milk increased only 5 percent over the 1954 figure. Twelve of these schools limited consumption to one half pint for each child ordering milk.

Total milk consumption in 78 schools with a previous base increased by 89 percent during the experimental period. Since this increase in total milk consumption is greater than the increase indicated per milk-drinking child, it can be inferred that the program also resulted in an increase in the number of children drinking milk in the survey schools.

Analysis of Data

Completed weekly reports from 96 schools and school systems were analyzed to determine trends in milk consumption. Since one school system returned separate weekly reports for eight schools, the number of schools reporting totals 104 in some instances. Of these 96 schools and school systems, 67 schools offered milk at noon and one or more times during the school day. Of the other 29, 12 offered only one half pint per child at lunch and 17 made seconds available.

The table below covers 84 schools for which complete data are available for comparable periods in 1954 and 1955 and shows the increase in the level of milk consumption per school.

Table I. Comparison of 1954 and 1955 milk consumption in 84 selected schools.

Average Daily Milk Consumption Per School		:	:	:	:
1954	:	1955	:	Increase	:
Half Pints				(Percent)	
172		328		156	91

The above data are related to the schools studied as a whole. No adjustment was made for changes in enrollment. An additional comparison was made for 78 schools with bases. In these 78 schools, the consumption for the experimental period showed an increase of 89 percent over base.

Effect of Additional Times of Milk Service on Milk Consumption Per Child - The average daily consumption of milk per child drinking milk for the 1953-54 term was assumed to be 1.00 half pint (the meal type requirement for the Type A lunch called for one 8-oz. serving of fluid white milk).

The average daily consumption per child for the period of this experiment was found to be 1.51 half pints of milk in the 60 schools which had adequate data for this comparison and which introduced additional times of service. These schools reported the total number of half pints served at all times and the number of individuals drinking milk during the five-week period under review.

The average daily consumption per individual was computed for each school for each of the five weeks. Tests for variance were made and no significant differences were found from week to week, but the variation among schools was quite high.

Table II summarizes the level of milk consumption for children drinking milk in schools with additional times of service. It is interesting to note that 83 percent of the 60 schools had milk consumption rates ranging from 1.0 to 1.7 half pints per milk-drinking child per day, while the range for the entire group was from 1.0 to 3.23 half pints per day.

Table II. Average daily per capita milk consumption among children drinking milk in 60 schools serving milk more than once a day.

Half Pints Consumed Per Child Per Day	Schools		Cumulative
	Number	Percent	Percentage
1.0 and 1.1	11	18.3	18.3
1.2 and 1.3	18	30.0	48.3
1.4 and 1.5	10	16.6	65.0
1.6 and 1.7	11	18.3	83.3
1.8 and 1.9	4	6.7	90.0
2.0 and 2.1	4	6.7	96.7
3.00 (actual)	1	1.7	98.3
3.23 (actual)	1	1.7	100.0
Total	60	100.0	

Table III shows that consumption per child drinking milk is considerably less in those schools which did not provide additional times of service.

Table III. Average daily per capita milk consumption for those drinking milk in 29 schools which served milk only with lunch.

Half Pints Consumed Per Child Per Day	Schools		Cumulative Percentage
	Number	Percent	
0.56 a/	1	3.4	3.4
1.0 b/	18	62.1	65.5
1.1 b/	8	27.6	93.1
1.2 b/	2	6.9	100.0

- a/ The school which averaged less than one half pint per child per day had milk delivered from a source almost 100 miles away. The principal indicated that delivery problems and costs were so great that they couldn't buy more milk.
- b/ Although not specified in the report, these are assumed to be mid-points of class interval.

Delivery Problems

Rural schools experienced greater problems in obtaining milk deliveries than did other schools. Ten of the 132 schools indicated that milk was delivered by the mail carrier, school bus driver, breadman, teachers or principal, or by a combination of these. In one case, milk is transported by the mail carrier for 50 miles, then picked up by a school bus driver or the principal and taken 8 miles further to the school. Consumption averages over three half pints per child daily in this school although milk is delivered only once a week.

Although some schools were isolated from normal delivery service, 56 percent reported daily or twice daily deliveries. Twenty-four percent received deliveries three times a week and 7.6 percent had deliveries twice each week.

Prices Paid by the Schools

Prices paid by the schools for milk varied from 3-1/8 cents per half pint (50 cents per gallon for bulk milk) to 7-1/2 cents per half pint. Exactly 100 of the schools included in the survey paid 6.0 cents per half pint. About 17 percent of the schools, however, paid less than 6 cents per half pint.

Prices Charged to the Students

In the 100 schools which paid 6 cents per half pint, milk was made available to the student at prices ranging from no charge to 6 cents. Table IV shows the frequency distribution of prices charged by these schools. A majority of the schools charged 3 cents or less. Some schools charged 4 or 5 cents and one charged 6 cents.

Table IV. Prices charged to children by 100 schools paying 6 cents for milk.

Student Price	: First Extra Serving With Lunch (No. Schools)	: First Serving Other Than With Lunch (No. Schools)
No charge	11	4
One cent	1	1
One cent to grade, 3 cents to high school	1	--
Two cents	44	46
Two and a half cents	1	2
Three cents	15	18
Four cents	3	5
Five cents	12	13
Six cents	1	1
No extras served	7	9
No answer	<u>4</u>	<u>1</u>
Total	100	100

Additional Information Developed During the Study

Although the project was designed to study the influence of new times of service on milk consumption, other useful information was developed on milk service and consumption in schools as a result of the survey.

Of the 132 schools completing the first questionnaire, 123 had some refrigeration facilities. Thirty-five of the schools reported that participation in the Special School Milk Program did require additional refrigeration.

Seventy-seven percent of the schools reported that their milk program did not require extra services by the deliverymen, 14.4 percent reported that their milk program did require extra services by the deliverymen, 8 percent reported milk was not delivered by the dairy, and one school stated that very little extra service was needed.

Paper cartons were used in about 60 percent of the schools and glass bottles in 27 percent of the schools. Miscellaneous methods were used in the balance of the schools, including refrigerated milk dispensers in 10 percent of the schools.

Table V indicates that schools were about equally divided between those buying milk at the regular wholesale price and those getting price concessions.

Table V. Basis for letting contracts for milk purchases.

<u>Method</u>	<u>Percent of Schools</u>
Regular wholesale price	47
Special school price	45
Lowest bid	6
Miscellaneous	2

There were some suggestions for improving the program: Ten schools felt, according to the authors: "The program is no better than the enthusiasm of the principals and teachers in the schools. We find where principals enter wholeheartedly into the program it goes over very satisfactorily. Where they do not, it is a flop." It was suggested that teachers emphasize the value of milk for good health and that there be more publicity ... "attractive posters, some kind of contest." Others suggested "more parent education on milk."



